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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,493	02/12/2002	Nikolai Ledentsov	QIL-5	7434

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EXAMINER

JACKSON, CORNELIUS H

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/074,493

Applicant(s)

LEDENTSOV ET AL.

Examiner

Cornelius H. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2002 and 03 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-89,91 and 92 is/are pending in the application.
- 4a) Of the above claim(s) 74-84 is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-73,85-89,91 and 92 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.



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TECHNOLOGY CENTER 2800**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 and 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-73 and 85-89 in Paper No. 06 is acknowledged. The traversal is on the ground(s) that "Where plural inventions are capable of being viewed as related in two ways, both applicable criteria for distinctness must be demonstrated to support a restriction requirement" and "If the search and examination of an entire application can be made without serious burden, the Examiner must examine it on the merits, even though it includes claims to independent or distinct inventions". This is not found persuasive because, as stated in Paper No. 4 (the last Office Action), A) Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as printing, welding, cutting and/or trimming. See MPEP § 806.05(d); B) Inventions I and III are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product (the optical amplifier) is deemed to be useful as a repeater or preamplifier and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit

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evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention; C) Inventions I and IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as printing, welding, cutting and/or trimming. See MPEP § 806.05(d); D) Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as measuring/testing device or remote sensor. See MPEP § 806.05(d); E) Inventions II and IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as measuring/testing device or remote sensor. See MPEP § 806.05(d); and F) Inventions III and IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention III has separate utility such as repeater (in a free space targeting laser system) or preamplifier (in a printing, welding, cutting and/or trimming device). See MPEP § 806.05(d).

The requirement is still deemed proper and is therefore made FINAL.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the coating and optical fiber must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

4. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

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4/17/07  
A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-73, 85-89, 91 and 92 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 1-73, 85-89, 91 and 92 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: substrate, current spreading layers, metal contacts, the bias, undoped or weakly doped confinement layers, side mirrors and the subject matter presented in the specification on page 9, lines 9-19.

8. Claims 1-73, 85-89, 91 and 92 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, since it is unclear how the cavity and active region are designed such that light propagates in the cavity in a direction tilted both normal to a lateral plane and with respect to the lateral plane.

9. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: feedback mechanism with any other structural element and the purpose of the feedback mechanism.

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10. The terms "high and intermediate" in claim 7 are relative terms which renders the claim indefinite. The terms " high and intermediate " are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. See claims 8 and 9 also.

11. The terms "high, intermediate and low" in claim 10 are relative terms which renders the claim indefinite. The terms " high, intermediate and low" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. See claims 11-13 also.

12. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: an optical aperture with respect to any other structural element.

13. Claim 29 recites the limitation "a current aperture" in line 7 of the claim. There already exists an antecedent basis for this limitation in the claim. Claims 30-46, 64, 65 and 68 are rejected since they depend on an indefinite claim.

14. Claim 40 recites the limitation "a current aperture" in line 7 of the claim. There already exists an antecedent basis for this limitation in the claim. Claims 41-46 and 68 are rejected since they depend on an indefinite claim.

15. Claim 47 recites the limitation "current apertures" in line 7 of the claim. There already exists an antecedent basis for this limitation in the claim. Claims 48-57, 66 and 67 are rejected since they depend on an indefinite claim.
16. Claim 69 recites the limitation "a current aperture" in line 3 of the claim. There already exists an antecedent basis for this limitation in the claim. Claims 70-73 are rejected since they depend on an indefinite claim.
17. Claims 87-89 are rejected since it is unclear how an optical fiber provides coupling to said optical fiber.
18. Claim 92 is rejected since it is unclear how a photodetector comprises a cavity having an active region.

***Claim Rejections - 35 USC § 102***

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. Claims 1-14, 19-23, 63, 85, 91 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Admitted Prior Art (APA). Regarding claims 1, 91 and 92, APA discloses a semiconductor laser/device **Fig. 1** comprising: a bottom reflector **102**, a top reflector **110**, and a cavity located between the bottom reflector **102** and the top reflector **110** comprising an active region **17** located within the cavity, wherein the

cavity and the active region 17 are designed such that light propagates in the cavity in a direction tilted both normal to a lateral plane and with respect to the lateral plane.

Regarding claims 2-14, 19-23, 63 and 85, APA discloses all the stated limitations, **see specification, Fig. 1 and page 6, line 15-page 8, line 5.**

21. Claims 1-15, 17, 19-23, 27, 28, 63, 85, 91 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Lim et al. (5757837). Regarding claims 1, 91 and 92, Lim et al. disclose a semiconductor laser/device **Figs. 1 and 15-18** comprising: a bottom reflector 24, a top reflector 36, and a cavity 26 located between the bottom reflector 24 and the top reflector 36 comprising an active region 30 located within the cavity 26, wherein the cavity 26 and the active region 30 are designed such that light propagates in the cavity in a direction tilted both normal to a lateral plane and with respect to the lateral plane.

Regarding claims 2-15, 17, 19-23, 27, 28, 63 and 85, Lim et al. disclose all the stated limitations, **see Figs. 1 and 15-18, col. 3, line 59-col. 4, line 67 and col. 8, line 11-col. 9, line 39.**

22. Claims 1, 2, 4-13, 18-24, 58-63, 85, 91 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanke et al. (5973336). Regarding claims 1, 91 and 92, Hanke et al. disclose a semiconductor laser/device **Fig. 1** comprising: a bottom reflector 2, a top reflector 5, and a cavity located between the bottom reflector 2 and the top reflector 5 comprising an active region 4 located within the cavity, wherein the cavity and the active region 4 are designed such that light propagates in the cavity in a

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direction tilted both normal to a lateral plane and with respect to the lateral plane, **see col. 1, line 52-col. 3, line 40.**

Regarding claims 2, 4-13, 18-24, 58-63 and 85, Hanke et al. disclose all the stated limitations, **see Figs. 1 and 15-18, col. 3, line 59-col. 4, line 67 and col. 8, line 11-col. 9, line 39.**

23. Claims 1-15, 17-23, 25, 58-63, 85, 91 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Magnusson et al. (6154480). Regarding claims 1, 91 and 92, Magnusson et al. disclose a semiconductor laser/device **Figs. 2, 5, 6 and 8-15** comprising: a bottom reflector **12'/32**, a top reflector **22**, and a cavity located between the bottom reflector **12'/32** and the top reflector **22** comprising an active region **24'** located within the cavity, wherein the cavity and the active region **24'** are designed such that light propagates in the cavity in a direction tilted both normal to a lateral plane and with respect to the lateral plane.

Regarding claims 2-15, 17-23, 25, 58-63 and 85, Magnusson et al. disclose all the stated limitations, **see Figs. 2, 5, 6 and 8-15, col. 4, line 6-col. 7, line 50.**

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al. (5757837). Lim et al., as applied to claims 1-15, 17, 19-23, 27, 28, 63, 85, 91 and 92 above, teach all the stated limitations, except for the optical aperture being made by partial selective removal of several layers of the top reflector. It would have been an obvious matter of design choice to any known method in the art make an optical aperture, since applicant has not disclosed that partial selective removal solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with an additional layer add on top of the top reflector.

26. Claims 16 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnusson et al. (6154480). Magnusson et al., as applied to claims 1-15, 17-23, 25, 58-63, 85, 91 and 92 above, teach all the stated limitations, except for the optical aperture being made by partial selective removal of several layers of the top reflector. Regarding claim 16, it would have been an obvious matter of design choice to any known method in the art make an optical aperture, since applicant has not disclosed that partial selective removal solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with an additional layer add on top of the top reflector.

Regarding claim 26, Magnusson et al. teach all the stated limitations, except for a grating fabricated above the top reflector, wherein the grating provides a distributed feedback in a lateral direction. It would have been an obvious matter of design choice to any known element in the art that provides a distributed feedback in a lateral direction, since applicant has not disclosed that a grating fabricated above the top reflector solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the top reflector being partially etched.

27. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanke et al. (5973336). Hanke et al., as applied to claims 1, 2, 4-13, 18-24, 58-63, 85, 91 and 92 above, teach all the stated limitations, except for a grating fabricated above the top reflector, wherein the grating provides a distributed feedback in a lateral direction. It would have been an obvious matter of design choice to any known element in the art that provides a distributed feedback in a lateral direction, since applicant has not disclosed that a grating fabricated above the top reflector solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with one mirror on each side of the cavity.

### ***Double Patenting***

28. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

29. Claims 29-57 and 64-73 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-54 of U.S. Patent No. 6611539. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims read on one another, encompassing the same scope/limitations.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (703) 306-5981. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.



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